



## 學術報告

### Detection against Linear Deception Attacks on Multi-sensor Remote State Estimation



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**Biography:** 李渝哲, 男, 目前为东北大学流程工业综合自动化国家重点实验室教授, 博士生导师, 中组部“青年千人”。2011年8月本科毕业于北京大学工学院力学系, 获得学士学位, 同时获得北京大学经济学双学士学位。随后进入香港科技大学电子与计算机工程学系攻读博士(导师: Ling Shi), 并于2015年8月获得博士学位。曾先后在澳大利亚纽卡斯尔大学(2013/05-2013/08, 访问学生, 导师: Daniel Quevedo)、加拿大阿尔伯塔大学(2015/09-2017/08, 博士后, 导师: Tongwen Chen)、香港中文大学(2017/11-2018/07, 博士后, 导师: Wing Shing Wong)进行访问和研究工作。2018年6月加入东北大学流程工业综合自动化国家重点实验室柴天佑院士课题组, 任东北大学“海外百人计划”青年特聘教授, 博士生导师。主要研究方向包括网络化系统的状态估计、控制与优化, 信息物理系统的安全与隐私, 及其在智能制造中的应用等。

In this talk, a security problem in cyber-physical systems (CPS) is studied. A remote state estimation process using multiple sensors is considered. The measurement innovation packets from each sensor, which may be modified by a malicious attacker, are sent to a remote fusion center through wireless communication channels. To avoid being detected by typical bad data detectors at the remote estimator's side, the attacker would maintain the statistical properties of the measurements. Based on the information extracted from the trusted sensors and the correlations between the trusted sensors and the suspicious sensors, we propose three sequential data verification and fusion procedures for different detection information scenarios. The corresponding impacts of possible attacking patterns on the estimation performance under different detectors are analyzed explicitly. Simulations are provided to illustrate the developed results.